

Amendments to the Drawings

The attached sheet of drawings includes changes to Fig. 2. This sheet replaces the original sheet. In Fig. 2, reference character "101" has been deleted as reference character "100" identifies the compact fuel processor.

R E M A R K S

This is responsive to the Office Action that was mailed February 15, 2006 (hereinafter "Office Action").

Amendments to the Specification

The title has been amended to clearly indicate the invention to which the claims are directed. Paragraph [0037] of the Specification has been amended to include previously omitted reference character "P."

Claim Amendments

Pursuant to Applicants' Election, claims 6-12 have been cancelled without prejudice.

Amendments to the Drawings

The attached sheet of drawings includes changes to Fig. 2. This sheet replaces the original sheet. In Fig. 2, reference character "101" has been deleted as reference character "100" identifies the compact fuel processor.

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Election/Restrictions

Applicants affirm the election of claims 1-5 and 13-24, for examination in the captioned application. Non-elected claims 6-12 have been cancelled without prejudice.

Drawings

The Examiner has objected to the drawings as failing to comply with CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: In figure 1, reference character "P" and in figure 2, reference character "101." In response, (1) paragraph [0037] of the Specification has been amended to include previously omitted reference character "P" and (2) in Fig. 2, reference

character "101" has been deleted as reference character "100" identifies the compact fuel processor.

Specification

The title has been amended to clearly indicate the invention to which the claims are directed.

Claim Rejections – 35 U.S.C. §102

Claims 1-5, 16, 17, 19, 20, and 22-24 stand rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 5,582,805 issued to Yoshizaki et al. ("Yoshizaki").

Claim 1 recites a method for heating a catalyst bed for startup comprising providing a catalyst bed having an upstream face and a downstream face; providing an electrical heating element positioned along one face of the catalyst bed; passing a small flow of reactants through the electrical heating element and catalyst bed; and heating the electrical heating element to initiate an exothermic reaction at the face of the catalyst bed, wherein the heat of reaction propagates throughout the catalyst bed thereby heating the catalyst bed for start-up. Yoshizaki does not anticipate a method for heating a catalyst bed for startup comprising: (1) providing a catalyst bed having an upstream face and a downstream face; (2) providing an electrical heating element positioned along one face of the catalyst bed; (3) passing a small flow of reactants through the electrical heating element and catalyst bed; and (4) heating the electrical heating element to initiate an exothermic reaction at the face of the catalyst bed, wherein the heat of reaction propagates throughout the catalyst bed thereby heating the catalyst bed for start-up. There is no disclosure in Yoshizaki that the Yoshizaki apparatus is specifically directed toward heating a catalyst bed for startup. Although Yoshizaki teaches that the apparatus of Yoshizaki could be used "when the engine is started as a low temperature" (col. 1, lines 13016), Yoshizaki does not teach that the apparatus of Yoshizaki be used specifically to heat a catalyst bed for startup. Yoshizaki fails to teach the heating of a catalyst bed for startup.

Claim 16 recites a method for heating a catalyst bed comprising providing a catalyst bed in communication with an electrical heating element; and heating the electrical heating element so as to maintain the desired temperature of the catalyst bed. Yoshizaki does not anticipate a method for heating a catalyst bed comprising: (1) providing a catalyst bed in communication with an electrical heating element and (2) heating the electrical heating element so as to maintain the desired temperature of the catalyst bed. There is no disclosure in Yoshizaki that the catalyst bed of Yoshizaki is in communication with an electrical heating element. Further, there is no disclosure in Yoshizaki regarding the maintenance of the desired temperature of the catalyst bed. Yoshizaki fails to teach communication between (1) the electrical heating element and the catalyst bed and (2) the maintenance of the desired temperature of the catalyst bed.

Claim 22 recites a method for heating a catalyst bed to a desired temperature, comprising positioning an electrical heating element upstream of the catalyst bed; and passing a fluid across the electrical heating element and through the catalyst bed, wherein the catalyst bed is heated to the desired temperature. Yoshizaki does not anticipate a method for heating a catalyst bed to a desired temperature comprising: (1) positioning an electrical heating element upstream of the catalyst bed and (2) passing a fluid across the electrical heating element and through the catalyst bed, wherein the catalyst bed is heated to the desired temperature. There is no disclosure in Yoshizaki regarding the passing of a fluid across the electrical heating element and through the catalyst bed wherein the catalyst bed is heated to the desired temperature. Yoshizaki fails to teach the passing of a fluid across the electrical heating element and through the catalyst bed wherein the catalyst bed is heated to the desired temperature.

Because Yoshizaki fails to teach one or more of the recited elements of each of claim 1, 16, and 22, reconsideration and withdrawal of the rejection of claims 1-5, 16, 17, 19, 20, and 22-24 under 35 U.S.C. §102(b) as being anticipated by Yoshizaki is respectfully requested.

Claims 13, 14, 16, 17, 19, and 20 stand rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 5,562,885 issued to Bayer et al. ("Bayer").

Claim 13 recites a method for heating a catalyst bed, comprising providing an electrical heating element positioned within a cooling coil located substantially within the catalyst bed; and heating the electrical heating element thereby heating the catalyst bed to a desired temperature. Bayer fails to anticipate a method for heating a catalyst bed, comprising (1) providing an electrical heating element positioned within a cooling coil located substantially within the catalyst bed; and (2) heating the electrical heating element thereby heating the catalyst bed to a desired temperature. The disclosure of Bayer contains no reference to a cooling coil. The only coil referenced in Bayer is a heating coil. Bayer fails to teach the positioning of an electrical heating element within a cooling coil substantially within the catalyst bed.

Claim 16 recites a method for heating a catalyst bed comprising providing a catalyst bed in communication with an electrical heating element; and heating the electrical heating element so as to maintain the desired temperature of the catalyst bed. Bayer does not anticipate a method for heating a catalyst bed comprising: (1) providing a catalyst bed in communication with an electrical heating element and (2) heating the electrical heating element so as to maintain the desired temperature of the catalyst bed. There is no disclosure in Bayer that the catalyst bed of Bayer is in communication with an electrical heating element. Further, there is no disclosure in Bayer regarding the maintenance of the desired temperature of the catalyst bed – Bayer discusses rapid and uniform heating but does not discuss maintenance of the desired temperature (col. 7, lines 55-64). Bayer fails to teach communication between (1) the electrical heating element and the catalyst bed and (2) the maintenance of the desired temperature of the catalyst bed.

Because Bayer fails to teach one or more of the recited elements of each of claims 13 and 16, reconsideration and withdrawal of the rejection of claims 13, 14, 16, 17, 19, and 20 under 35 U.S.C. §102(b) as being anticipated by Bayer is respectfully requested.

Claims 16, 17, and 20 stand rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 5,5512,251 issued to Brunson et al. ("Brunson").

Claim 16 recites a method for heating a catalyst bed comprising providing a catalyst bed in communication with an electrical heating element; and heating the electrical heating element so as to maintain the desired temperature of the catalyst bed.

Brunson does not anticipate a method for heating a catalyst bed comprising:

(1) providing a catalyst bed in communication with an electrical heating element and
(2) heating the electrical heating element so as to maintain the desired temperature of the catalyst bed. There is no disclosure in Brunson that the catalyst bed of Brunson is in communication with an electrical heating element. Further, there is no disclosure in Brunson regarding the maintenance of the desired temperature of the catalyst bed – Brunson discusses rapid and uniform heating but does not discuss maintenance of the desired temperature (col. 7, lines 55-64). Brunson fails to teach communication between (1) the electrical heating element and the catalyst bed and (2) the maintenance of the desired temperature of the catalyst bed.

Because Brunson fails to teach one or more of the recited elements of claim 16, reconsideration and withdrawal of the rejection of claims 16, 17, and 20 under 35 U.S.C. §102(b) as being anticipated by Brunson is respectfully requested.

Claim Rejections – 35 U.S.C. §103

Claims 15 and 18 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Bayer.

According to the Examiner, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide heat, as needed, during operation of the converter to further achieve high efficiency. Office Action, p 6. Applicants' review of Bayer finds no teaching or suggestion that the operation of the converter of Bayer should include steps for heating during transient operation. As a result, claims 15 and 18 are not unpatentable over Bayer.

Claims 18 and 21 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Brunson.


According to the Examiner, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide heat, as needed, during operation of the converter to further achieve high effective and satisfactory conversion. Office Action, p 6. Applicants' review of Brunson finds no teaching or suggestion that Brunson should include steps for heating during transient operation. As a result, claims 18 and 21 are not unpatentable over Brunson.

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All of the stated grounds of objection and rejection are believed to have been properly traversed, accommodated, or rendered moot. Applicants therefore respectfully request that the Examiner reconsider all presently outstanding objections and rejections and that they be withdrawn. Applicants believe that a full and complete response has been made to the outstanding Office Action and, as such, the present application is in condition for allowance. If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at the number provided.

Prompt and favorable consideration of this Response is respectfully requested.

Respectfully submitted,



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